



PRELIMINARY ENGINEERING REQUIREMENTS

for
**WASTEWATER
SRF Projects**

The **PRELIMINARY ENGINEERING REPORT (PER)** is a document that provides the information necessary for the State Revolving Fund Loan Program (SRF) to determine the technical, economic and environmental adequacy of the proposed treatment works &/or collection system project. **SRF Staff** may request additional information to complete a **PER**.

This document is based on the State Revolving Fund Loan Program Guidance in effect on August 8, 2006. Because the requirements for SRF projects are subject to change, you should contact SRF Staff before submitting your PER and application to be sure that you are complying with current requirements. All applications will be reviewed in accordance with the provisions of IC 13-18-13. Approval of a PER by the SRF Section is for planning purposes only and SRF does not relieve the Participant of its responsibility to properly design, build and effectively operate and maintain the proposed facilities.

* **ALL CORRESPONDENCE and PER REVISIONS MUST BE DATED, 3-HOLE PUNCHED, & TRANSMITTED BY THE AUTHORIZED REPRESENTATIVE**

* **SUBMIT 3 COPIES OF THE PER IN 3-RING BINDERS TO:**

**SHELLEY LOVE
SRF WW PROGRAM ADMINISTRATOR
STATE REVOLVING FUND LOAN PROGRAM
100 N. SENATE AVE. RM. 1275
INDIANAPOLIS, INDIANA 46204**

* **INCLUDE GRAPHS/TABLES WHERE APPLICABLE**

See ATTACHMENTS following the document.

* **INCLUDE A TABLE OF CONTENTS, LIST OF GRAPHICS, LIST OF TABLES & LIST OF APPENDICES**

* Access <http://www.in.gov/ifa/srf/> for guidance under Wastewater Documents

PREFACE

Briefly describe the Project **NEED** and **SCOPE** and **ENVIRONMENTAL BENEFITS**. The project must address an existing water pollution abatement need.

CHAPTER 1 PROJECT LOCATION

- * Describe the Study Area, the existing and 20-year Service Areas, and Project Area(s)/locations(s).
- * Identify the USGS Quadrangle map(s) and Section(s), Township(s) line(s) and Range(s) lines involved.
- * Provide a **map(s)** (*USGS Quadrangle*) displaying:
 1. Study area
 2. Existing & 20-year service areas
 3. Project area(s)/location(s) (proposed WWTP sites, line routings, lift stations, etc.)
- * Provide a description of the project area/location/route
- * Include a statement indicating whether the entire project is being constructed within the city/county/town's right-of-way or easements. If it is not, the participant will need to provide evidence that it has, or will have by a mutually agreeable date, the required property rights prior to SRF's issuance of bid authorization.

Note: All GRAPHICS except schematics must display North arrow & Bar Scale

CHAPTER 2 CURRENT SITUATION

- * Describe the *existing* Wastewater Treatment Plant (WWTP) & Collection System *including* age & upgrades.
- * Provide Layouts/Site **maps** of existing Collection System, WWTP or other applicable site(s), where applicable.
- * Provide a description of the current condition of facilities (if applicable), current pollutant loadings and flows in order to establish the *project need to abate existing water pollution*.
- * Document operating problems/failures of properly constructed & maintained *on-site* systems based on:
 1. *Direct* evidence of water pollution or public health hazards (such as ponding, well contamination, direct discharges, etc.)
 2. *Indirect* evidence establishing need/failure (such as soil type, terrain, lot size, etc.)
 3. Letter from County Sanitarian
- * Collection Systems problems/needs
 1. Chronic operational problems
 - a. Surcharging
 - b. Surface ponding
 - c. Basement back-ups
 - d. Unauthorized overflows/bypasses, etc.
 2. Rehabilitation/Replacement needs
 - a. Broken/collapsed sewers
 - b. Inadequate capacity of pipes/interceptors/lift stations
 - c. Facilities exceeding useful life
 3. Document:
 - a. Sewer Ban Early Warning Letter
 - b. Sewer Ban Notification
 - c. Agreed Order (signed/pending)
 - d. Consent Decree
 - e. Other
 4. Indiana CSO Strategy requirements:
 - a. 9 minimum controls
 - b. Long-Term Control Plan
- * WWTP problems/needs
 1. Chronic operational problems
 - a. Hydraulic &/or Organic Overloading
 - b. Solids Washout
 - c. NPDES Permit Violations
 - d. Unauthorized overflows/bypasses, etc
 - e. Other

continued

2. Renovation/Replacement/Upgrade/Expansion
 - a. Facilities exceeding useful life
 - b. New NPDES Permit Limits
 - c. CSO Requirements
 - d. Other
 3. Document:
 - a. Notice of Violation (NOV)
 - b. Warning of Non-Compliance (WONC)
 - c. Agreed Order (AO) [signed/pending]
 - d. New NPDES Requirements [w/Schedule of Compliance]
 - e. Sewer Ban Early Warning or Sewer Ban Notification
- * Sludge Handling & Disposal problems/needs
1. Federal 40 CFR Part 503 Sludge Regulations
 2. NPDES Requirements
 3. Land Application Permit Requirements
 4. Facilities exceeding useful life
- * Provide tables for Current Flows & Wasteloads
(Refer to **Tables I, II, III**), which include:
- *average design flow* (mgd or gpd)
 - *peaking factor*
 - *peak design flow* (mgd or gpd)
 - *peak sustained infiltration*
 - *peak hourly inflow/wet weather infiltration*
 - *wasteload concentrations*
 - *wasteload pounds*
- * Significant contributors
1. Commercial
 2. Industrial
 3. Institutional (schools, jails, hospitals, etc.)
 4. Semi-publics
 5. State/other facilities

NOTE: Certify that the existing wastewater collection & treatment system has and will have during the 20-year study period, adequate capacity to transport & treat all wastewater flows generated from the service areas (except for permitted CSOs, which should be addressed under the Indiana CSO strategy) without surcharges, bypasses, basement back-ups, or other chronic operational problems.

If the participant cannot certify, then the proposed project should address known problem areas; otherwise, the participant must conduct appropriate **sewer studies** in order to identify and address the problems. The **PER** should include information on the sewer studies done (what was done, where, when, why, what was found), including the recommendations and anticipated results (in terms of residual I/I). SRF does NOT need copies of the actual sewer studies.

CHAPTER 3 FUTURE SITUATION

- * Current Population
- * Population Projections (20-year) w/explanation for reasonable growth, *based upon*:
 1. Census data
 2. Building permits
 3. Current development trends
 4. Active Regional Planning Commission; if applicable
 5. Other
- * Tables for proposed (*Refer to Tables IV & V*)
 1. Design (20-year) flows
 - a. Domestic
 - b. Commercial/Institutional
 - c. Industrial
 - d. Peak sustained or residual infiltration
 - e. **Average** design flow (mgd or gpd)
 - f. Peaking factor
 - g. Peak hourly or Residual peak hourly Inflow/Wet weather infiltration
 - h. Peak design flow (mgd or gpd)
 2. Wasteloads
 - a. Concentrations
 - b. Pounds
- * Proposed WWTP effluent limits based on:
 1. Design flows
 2. NPDES Permit (*Contact Municipal/NPDES Permit Section Chief @ 317/ 232-8670*)
 3. Receiving Stream
 4. Wasteload Allocation (WLA)
- * Evaluation of ability to transport & treat all flows (*except* permitted overflows)

CHAPTER 4 EVALUATION of ALTERNATIVES

- * Identify a couple of *feasible* alternatives

- * Description of alternatives considered, *including*:
 1. No action
 2. Optimum operation/integration of existing facility
 3. Collection System Rehabilitation/Replacement
 4. New Collection System/Interceptor routes and alternative routes
 5. WWTP
 - a. Upgrade/Expansion
 - b. Regionalization potential
 - c. Alternative WWTP sites
 6. New WWTP
 - a. Regionalization potential
 - b. Alternative WWTP sites
 - c. Treatment alternatives
 7. Sludge Handling & Disposal Alternatives
 8. Phasing

- * Rationale for selection of Recommended Alternative
 1. Monetary
 2. Technical
 3. Reliability
 4. Implementability
 5. Environmental Impacts

CHAPTER 5 EVALUATION OF ENVIRONMENTAL IMPACTS

To avoid comments, follow the text and graphics guidance provided at the Project Planning Meeting

- * Discuss *NEGATIVE IMPACTS* only. Please be clear, concise & complete.
- * **Note:** *Projects which propose treatment capacity increases or new upsized lines must include the “Induced Impacts” language provided in the SRF Environmental Evaluation Section: Procedures & Language guidance.*
- * The PER **must** discuss *direct* (primary impacts due to construction, operation & maintenance of the treatment/collection system) and *indirect* (secondary or induced impacts made possible by the project) impacts of the feasible alternatives (including the no-action alternative) on:
 1. Disturbed/Undisturbed Land (provide soils maps only if in undisturbed land)
 2. Historic/Architectural Resources (provide Interim Report maps, if available)
 3. Wetlands (provide wetland maps [**not from federal internet mappers**])
 4. Surface waters (provide wetland and/or topographic maps)
 - a. Natural, Scenic and Recreational Rivers and Streams (312 IAC 7-2)
 - b. Waters of High Quality; [327 IAC 2-1-2(3)]
 - c. Exceptional Use Streams; [327 IAC 2-1-11(b)]
 - d. streams, rivers, lakes
 - e. label stream crossings on a map
 5. Groundwater
 - a. impact to local wells and water table
 - b. SRF will supply a map of the St. Joseph aquifer area for use in the PER, if necessary (for projects in far north central IN)
 6. 100-year floodplain (provide FEMA or other floodplain maps, if available)
 - a. Cannot be used for borrow or fill w/o DNR approval
 - b. Operability & Accessibility of the facilities during 100-year floods
 7. Plants and Animals
 - a. streams, wetlands, wooded and scrub/shrub areas
 - b. no need to research endangered species records
 8. Prime Farmland Impacts and Influence of Local Geology
 - a. The consultant will initiate and complete the Farmland Conversion Impact Rating form process for all SRF projects which will turn dirt to install

anything. State whether or not the project will affect prime/unique farmland.

b. Discuss the influence, if any, of karst and bedrock areas on the project

9. Air Quality

10. Open Space and Recreational Opportunities

11. Lake Michigan Coastal Management Zone Impacts (applies only to projects in the north part of Lake, Porter and LaPorte counties; SRF will supply a map of the IDNR Coastal Zone Program Area for use in the PER).

12. National Natural Landmarks Impacts (see http://www.nature.nps.gov/nml/Registry/USA_Map/States/Indiana/indiana.htm)

13. Mitigation Measures to avoid negative impacts (such as erosion into nearby waterways or wetlands, air pollution, growth, odors, etc.) of project construction and implementation.

* Further environmental review will be necessary (1) if work on an SRF-approved project still remains to be done and more than 5 years have passed since PER approval, (2) if additional work is proposed after that time, or (3) if additional work is proposed within the 5-year period in areas not vetted previously.

CHAPTER 6 SELECTED PLAN

- * Describe the Selected Plan components & processes
- * Discuss Phasing (if applicable)
- * Include a completed *Preliminary Design Summary*
- * Provide Schematics/Layouts/Maps/Design flow train of the proposed project or selected plan, *including* North arrow & bar scale (*not necessary* for schematics).
- * Provide the *Project Component Costs* (refer to **Table VI**) and the *Selected Plan Cost* (refer to **Table VII**).
- * Include a Project Schedule/Milestone dates for:
 1. PER Submittal
 2. Anticipated PER approval
 3. Plans & Specs submittal
 4. Plans & Specs approval
 5. Land and easement acquisition
 6. Advertise for Bids
 7. Loan closing (after bids are received for subsidized loans)
 8. Contract Award
 9. Initiation of construction
 10. Substantial completion of construction
 11. Initiation of operation
- * Discuss Contract operations
 1. Operation and/or Lab work
 2. Land application
 3. Landfilling
 4. Other

CHAPTER 7 LEGAL, FINANCIAL & MANAGERIAL CAPABILITIES

- * Include the **2** required **Resolutions** (*refer to ATTACHMENTS A & B*):
 1. Authorized Representative
 2. PER Acceptance
- * Include the completed *SRF Project Cost/Financing Information Form* **Table VIII**
- * Include Letter(s) of intent from:
 1. Land/easement owners
 2. Significant flow/wasteload contributors
 3. Contract operators
- * *Include Inter-local Governmental Agreement and/or Contracts or intent to obtain either. SRF Loan Program can not close on a loan until the Inter-Local Government Agreement or Contract between the affected parties is signed and executed.*

CHAPTER 8 PUBLIC PARTICIPATION

- * Include a copy of the Publisher's Affidavit from the newspaper with the Public Hearing notice.
- * Notify contract customer and/or significant flow/wasteload contributors or rate payers.
- * Have completed PER available for public review 10 days prior to Public Hearing.
- * Include a Sign-in sheet showing who attended the Public Hearing.
- * Include either meeting minutes or a Transcript of the Public Hearing.
- * Include *all written comments* submitted by the public, including comments submitted during the public hearing and during the 5-day period following the hearing. Also include any *response* to comments provided by or on behalf of the Participant.
- * Provide prepared, self-sticking **Mailing Labels** for:
 1. Interested parties (those individuals, industries, groups, organizations which demonstrated an interest in receiving copies of the Environmental Assessment/Finding of No Significant Impact). Be sure to include everyone who attended the public hearing.
 2. County Drainage Board
 3. County Health Department
 4. Active Regional Planning Commission for the planning area
 5. Local media outlets (newspaper, radio, or t.v. station)
 6. Customer Communities

ATTACHMENTS

Resolutions

- A. Authorized Representative *Model*
- B. PER Acceptance *Model*

Tables

- I. EXISTING WW FLOWS OF SEWERED & UNSEWERED COMMUNITIES *MODEL*
- II. CURRENT TREATMENT PLANT OPERATION *MODEL*
- III. EST. INFLUENT STRENGTH & LOADINGS *MODEL*
- IV. DESIGN TREATMENT PLANT FLOWS *MODEL*
- V. DESIGN TREATMENT PLANT LOADINGS *MODEL*
- VI. EST. CONSTRUCTION COSTS of the SELECTED ALTERNATIVE *MODEL*
- VII. SELECTED PLAN COST SUMMARY *MODEL*
- VIII. SRF PROJECT FINANCING INFORMATION *MODEL*

MODEL AUTHORIZED REPRESENTATIVE RESOLUTION

WHEREAS, the (PARTICIPANT) of _____, Indiana, herein called _____, has plans for a municipal water pollution control project to meet State and Federal regulations, such as the NPDES discharge limitations, and the community intends to proceed with the construction of such works:

WHEREAS, the (PARTICIPANT) has adopted this Resolution dated _____.

NOW, THEREFORE, BE IT RESOLVED by the Council/Board, the governing body of said _____, that:

1. _____ be authorized to make application for an SRF Loan and provide the State Revolving Fund Loan Program such information, data and documents pertaining to the loan process as may be required, and otherwise act as the authorized representative of the community.
2. The community agrees to comply with the Indiana Finance Authority, State of Indiana and Federal requirements as they pertain to the SRF.
3. That two copies of the resolution be prepared and submitted as part of the community's Preliminary Engineering Report.

ADOPTED this _____ day of _____, 2008.

THE (PARTICIPANT) OF _____, INDIANA
BY AND THROUGH ITS COUNCIL/BOARD OF TRUSTEES

AUTHORIZED SIGNATORY

_____ BY: _____

ATTEST: _____

B.
MODEL PER ACCEPTANCE RESOLUTION

WHEREAS, the (PARTICIPANT) of _____ County, Indiana, has caused a Preliminary Engineering Report, PER, dated _____, to be prepared by the consulting firm of _____; and

WHEREAS, said PER has been presented to the public at a public hearing held _____, for their comments; and

WHEREAS, the (PARTICIPANT's) Board/Council finds that there was not sufficient evidence presented in objection to the recommended project in the Preliminary Engineering Report.

NOW, THEREFORE BE IT RESOLVED THAT:

The _____ Preliminary Engineering Report dated _____ be approved and adopted by the

(PARTICIPANT's) Board/Council; and

That said PER be submitted to the State Revolving Fund Loan Program for review and approval.

Passed and adopted by the (PARTICIPANT's) Board/Council this _____ day of _____, at their regularly scheduled meeting.

President/Mayor

Member

Member

Member

Attest: _____

TABLE I

**MODEL FOR EXISTING WASTEWATER FLOWS (in gallons per day)
OF SEWERED AND UNSEWERED COMMUNITIES**

Existing Treatment Facilities Design Flows (for Sewered Communities only)

Average Design Flow (gpd) _____ Peak Design Flow (gpd) _____

Domestic ¹ (D)	_____	Peak DCI (Total DCI X Peaking Factor) ⁴	_____
Commercial/ Institutional ¹ (C)	_____	Peak Hourly Inflow &/or Wet Weather Infiltration ⁵	_____
Industrial ¹ (I)	_____	<u>Peak Hourly Flow</u>	=====
<u>Total DCI</u>	=====		
Peak Sustained Infiltration ²	_____		
TOTAL EXISTING FLOW³	=====		

1. DCI flows must be based upon actual water use records where possible. Flows may be estimated by one of the following methods:
 - a) Billing records for the most recent 24 months (less 10-20 % consumption) are to be used whenever available;
 - b) When billing records are unavailable, pumped water volumes (less 20-40 % consumption and losses) for the most recent 12 months are to be used;
 - c) In communities (or portions thereof) without a water supply system, use 310 gpd/connection or 100 gpcpd.

2. Based on I/I analysis reviewing the most recent MRO's (24 months) during a high groundwater non-rainfall day period (preferably 7-14 consecutive days) and taking the average followed by subtracting the average DCI (sewered communities only). For unsewered communities, infiltration could be based on 200 gpidm (Conventional Gravity Sewers).

3. Total DCI + Peak Sustained Infiltration

4. System Peaking Factor (check which applies)
 - a) Measured from hourly flow data _____ (the preferred method for existing conventional gravity sewers)
 - b) i. Estimated from 10-States Standards _____ (Conventional Gravity Only)
 - ii. Estimated from other source (list) _____

5. Sewered Communities only.

	<u>Yes or NA</u>
_____ 1. Flow meter calibrated	
_____ 2. Flows appear accurate	
_____ 3. Based on subtracting the dry weather peak flows from the influent peak flow including all bypassed flows. If this information is not available verify if the peak hourly flow can be determined based on flow data obtained from the influent pumping station(s).	

TABLE II**MODEL FOR CURRENT TREATMENT PLANT OPERATION**

	Concentration mg/l	Daily Load lbs
INFLUENT		
CBOD5	_____	_____
TSS	_____	_____
NH3-N	_____	_____
P	_____	_____
Other	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____
EFFLUENT		
CBOD5	_____	_____
TSS	_____	_____
NH3-N	_____	_____
P	_____	_____
Total Residual Cl	_____	_____
DO	_____	_____
Other	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____

page # or NA

_____ Above values are derived from the 24 most recent consecutive MROs &/or DMRs

dates of MROs:_____

dates of DMRs:_____

TABLE III**MODEL FOR ESTIMATED INFLUENT STRENGTH & LOADINGS**
UNSEWERED COMMUNITIES**Conventional Gravity, Pressure, Vacuum Sewers**

	Concentration (mg/l)			Daily Load (lb)		
	D	C	I	D	C	I
CBOD ₅	_____	_____	_____	_____	_____	_____
TSS	_____	_____	_____	_____	_____	_____
NH ₃ -N	_____	_____	_____	_____	_____	_____
P	_____	_____	_____	_____	_____	_____

Source(s) of Data:

Domestic (**D**) _____Commercial/Institutional (**C**) _____Industrial (**I**) _____

TABLE IV

MODEL FOR DESIGN TREATMENT PLANT FLOWS (gpd or mgd)

Domestic (D)	_____
Commercial/ Institutional (C)	_____
Industrial (I)	_____
<u>Total DCI</u>	=====
+ Residual Infiltration	_____
AVG. DESIGN FLOW	=====
Peak DCI	_____ (peaking factor = _____)
Residual Infiltration	_____
Residual Peak Hourly Inflow &/or Wet Weather Infiltration	_____
PEAK DESIGN FLOW	=====

TABLE V**MODEL FOR DESIGN TREATMENT PLANT LOADINGS**

	Concentration (mg/l)	Daily Load (lb)
Influent CBOD5	_____	_____
TSS	_____	_____
NH3-N	_____	_____
P	_____	_____
Other	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____

TABLE VI

ESTIMATED CONSTRUCTION COSTS OF THE SELECTED ALTERNATIVE *MODEL*

Alternative: _____

Item	Quantity	Unit Cost	Total Cost
1)_____	_____	_____	_____
2)_____	_____	_____	_____
3)_____	_____	_____	_____
4)_____	_____	_____	_____
5)_____	_____	_____	_____
6)_____	_____	_____	_____
7)_____	_____	_____	_____
8)_____	_____	_____	_____
9)_____	_____	_____	_____
10)_____	_____	_____	_____

Total Construction Cost _____

TABLE VII**MODEL SELECTED PLAN COST SUMMARY**

Item	Total Cost
Non-Construction Costs	
Administrative and Legal	_____
* Land & Rights-of-way Acquisition	_____
Relocation	_____
Engineering Fees	
Design	_____
Construction	_____
Other	_____
Project Inspection	_____
Costs Related to Plant Start-up	_____
<u>Non-Construction Subtotal</u>	=====
Construction and Equipment Subtotal	_____
Contingencies (not to exceed 10%)	_____
TOTAL PROJECT COST	=====

* Ineligible for SRF unless it represents administrative costs to acquire easements and/or land. Land may be eligible if it is an integral part of the treatment process.

TABLE VIII**SRF PROJECT FINANCING INFORMATION**

(Wastewater)

1. Project Cost Summary

- a. Collection/transport system cost _____
- b. Treatment System cost _____
- c. Non-Point-Source (NPS) cost (septic tank removal) _____
- Subtotal Construction Cost _____
- d. Capacity Reservation Fees _____
- e. Contingencies _____
(should not exceed 10% of construction cost)
- f. Non-construction Cost _____
e.g., engineering/design services, field exploration studies, project management & construction inspection, legal & administrative services, land costs (including capitalized costs of leased lands, ROWs, & easements), start-up costs (e.g., O&M manual, operator training).
- g. **Total Project Cost** (lines a+b+c+d+e+f) _____
- h. Total ineligible SRF costs* (see next page) _____
* Total ineligible SRF costs will not be covered by the SRF loan.
- i. Other funding sources (list other grant/loan sources & amounts)
- (1) Local Funds (hook-on fees, connection fees, capacity fees, etc.) _____
- (2) Cash on hand _____
- (3) Community Development Block Grant - Community Focus Fund (CFF) _____
- (4) US Dept. of Agriculture Rural Development (RD) _____
- (5) Other _____
- Total Other Funding Sources** _____

2. SRF Loan Amount (line g minus line item h+i*) _____

* If there are adequate funds available under (i) to cover (h) then subtract (i) only.

3. Financial Advisor

- a. Firm _____
- b. Name _____
- c. Phone Number _____

4. Bond Counsel

- a. Firm _____
- b. Name _____
- c. Phone Number _____

The following costs are not eligible for SRF reimbursement:

1. Land cost (*unless it's for sludge application*) \$_____

Only the actual cost of the land is **not eligible**; associated costs (such as attorney's fees, site title opinion and the like) **are eligible**.
2. Materials & work done on private property \$_____

(*Installation/repair of laterals, including disconnection of inflow into laterals; abandonment of on-site systems [septic tank or mound systems]*). Grinder pumps, vacuum stations and other appurtenances/installations on private property to treat/transport ARE fundable IF owned and maintained by the participant.
3. Grant applications and income surveys done for other agencies (e.g., OCRA, RUS, etc.).

\$_____
4. Any project solely designed to promote economic development and growth is ineligible.
5. Costs incurred for preparing NPDES permit applications and other tasks unrelated to the SRF project.

\$_____
6. Cleaning of equipment, such as digesters, sand filters, grit tanks and settling tanks. These items should have been maintained through routine operation, maintenance and replacement by the political subdivision. Sewer cleaning is **ineligible** for SRF *unless* the cleaning is required for sewer rehabilitation such as sliplining and cured in place piping (CIPP)

\$_____